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Biography

Ana Maria Mihoci, MD, is a physician and doctoral researcher at the “Grigore T. Popa” University of Medicine and Pharmacy, Iași, Romania, affiliated with the Clinical Hospital of Obstetrics and Gynecology “Elena Doamna”. Her research focuses on reproductive medicine, infertility, chronic endometritis, endometrial receptivity, reproductive immunology, and assisted reproductive technologies, with particular interests in diagnostic biomarkers, evidence synthesis, and personalized approaches to infertility care.

MUM1 (IRF4): A Promising Biomarker for the Diagnosis of Chronic Endometritis

Abstract

Background: Chronic endometritis (CE) is increasingly recognized as an important contributor to infertility, recurrent implantation failure, and recurrent pregnancy loss. Accurate identification of endometrial plasma cells remains essential for diagnosis; however, currently available diagnostic approaches remain heterogeneous. MUM1 (IRF4), a nuclear marker expressed in plasma cells, has recently emerged as a promising biomarker for the diagnosis of CE.

Objective: To evaluate the diagnostic accuracy of MUM1 immunohistochemistry for the detection of chronic endometritis.

Methods: A systematic review and Bayesian meta-analysis were conducted in accordance with PRISMA guidelines. Electronic databases were searched for studies assessing MUM1 expression in endometrial tissue. Diagnostic performance was evaluated using a Bayesian bivariate random-effects model. Pooled sensitivity, specificity, likelihood ratios, and diagnostic odds ratio (DOR) were calculated.

Results: Six studies involving 1,574 women met the inclusion criteria, with four studies eligible for quantitative synthesis. MUM1 demonstrated high diagnostic performance, with a pooled sensitivity of 87.6% and specificity of 85.3%. The pooled positive likelihood ratio was 5.83, while the pooled negative likelihood ratio was 0.15. The pooled diagnostic odds ratio reached 40.27, indicating favorable overall diagnostic accuracy. Across the included studies, MUM1 consistently identified plasma cells in endometrial tissue and showed potential value as an adjunctive diagnostic marker in CE.

Conclusions: MUM1 (IRF4) appears to be a reliable adjunctive biomarker for the diagnosis of chronic endometritis and may enhance plasma-cell detection in reproductive pathology. Its diagnostic performance supports further investigation and validation in prospective studies aimed at establishing standardized diagnostic protocols and defining its role in infertility evaluation.